



## New Inventions.

### Improved Adjustable Incline Door and Gate.

This is an invention of Mr. Thomas Peck, Syracuse, N. Y., and it is a most excellent one. On the casing of the door is fastened the adjustable incline plane, on which works an anti-friction roller, which roller is fastened on the door, so that there is but little friction. The incline can be altered to any grade so as to mount the weight of the door or gate to which the butt is attached. This is done by a set screw which works in a slot in the incline, so that without altering the hanging of the door it can be raised to any required height.

These butts make the door or gate to which they may be attached very close, when shut, nearly airtight, and by moving the door on an incline, it can be raised over carpets, or if a gate, over snow as deep as the steepness of the incline. Gates on which this butt is attached can be opened the full width so as to allow teams to pass, or other vehicles, a much easier method than lifting up a ball or chain, as the anti-friction roller runs in a small dentation on the end of the incline to hold the gate or door fast when it is open, and it can be shut just with a touch of the hand. This invention is also good because it is cheaper than any common plan for the same purpose. A model may be seen for a few days at Lowrey's Hotel in this city, and all communications about sale, or rights, addressed post paid to Geer, Woolson & Brothers, Syracuse, N. Y., the proprietors of this patent for all the United States except this city, Jersey and South Carolina, will be promptly attended to. In our list of patents for April 10th, 1874, a mistake was made in reference to the patent for the above invention, by stating that letters patent were granted to Thomas Peck for improvements in Saw Mill Gearing. It should have read "improvement in devices for closing doors, &c."

### Evaporation Grate.

Mr. D. Bettomer of this city, has invented a novel grate which in some cases will be very useful and beneficial.

With the exception of two handsome ornaments in front, it has the same appearance as any other parlor grate, yet by a simple scientific evaporating apparatus, from thirty to sixty gallons of water, if required, can be evaporated during the day. A mild vapour is thrown out, and not a hot steam; the invention appears to control the amount of the vapor, and even the force of the fire which produces it.

### Street Cleaning Machine.

The street cleaning machine, an English invention, which we described in No. 48, vol. 2, Scientific American, was recently tested in a street with hand labor, in Manchester, and did better work and more quickly, with the attendance of two men, than thirty men sweeping and using hoes and shovels.

### Improvement in the Manufacture of Cotton Cards.

We have lately seen a most beautiful specimen of cotton card, made in the factory of W. C. Noyes, Esq., of this city, superintended by Mr. T. G. Boone, of Brooklyn. It is equal in appearance to the imported linen card, is very strong and smooth. We believe that application has been made for a patent for this valuable invention, the process of manufacture being entirely new.

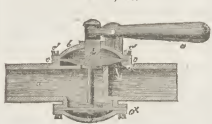
### New Lubricating Compound.

Levis Kirk, the inventor of the steam hammer, and John Dodsword, of Reading, Penna. have invented a new compound which they say "experience has proved to be a superior compound for preventing friction." The invention is the union, under a high degree of heat, of oil with asphaltum, or with coal tar, or with both together.

### Method of Preserving the Denominations of a Bank Bill from Being Altered.

Albion S. Crane and Co., of Dayton, Massachusetts, manufacturers of bank paper, have invented a very simple and efficient method of preserving the denomination of a bill from alteration. Threads of silk and cotton are so arranged in parallel lines, lengthways with the note, and embodied in the substance of the paper during its manufacture. A one dollar bill has one thread, and one is added for each denomination up to five dollars, then a ten dollar bill has six, another is added for twenty, fifty, one hundred, five hundred, and one thousand; the last having eleven threads. It must be very difficult, if it is impossible to insert another thread after once the note is finished, and as the threads mark its value as distinctly as the figures, the chances of a successful alteration are at least very greatly diminished. The Mechanics' Banking Association of this city, and several of the banks in this state and at the east, have ordered the threaded paper, and it will probably come into general use. It is desirable that something should be hit upon that will protect the frequent frauds upon the public from the alteration of bank bills.

### Improvement in Water Taps, Cistern Valves, &c.



This is a new description of tap, which is not only far more safe, but can be constructed at less cost than the common description of cocks. This is effected by a novel and ingenious application of two flexible diaphragms—the upper of which, being acted upon by the lower, is pulled down on its seat, and forms a perfectly leakless joint. The above engraving represents a longitudinal section of a tap for ordinary purposes as closed, *a* is the barrel; *b*, the cover; *c* and *d* are two flexible diaphragms of vulcanized caoutchouc, fastened by screws as represented; the top one is actuated by the spindle and disc *d*, moved by the lever *e*; the lower diaphragm forms a surface to be pressed upon by the column of water above the tap, which pressure by means of the upright spindle connecting it with *d*, pulls down the upper diaphragm, and forms a perfect valve and stuffing box, whereby the escape of the liquid is entirely prevented. The arrows indicate the course of the liquid; and the pressure may be regulated by adapting the areas of the two to the degree of tightness required, it being in proportion as the bottom one exceeds the top in area. It will be observed, that its motion is almost void of friction; and we consider it a beautiful application, which may in time supersede the old form of tap. For cistern valves, they are well adapted—opening the full area upon the least descent of the ball, and are not liable to be set fast.

### Improved Drill Drill.

P. Wightman and Horace Vaughan, of East Greenwich, Rhode Island, have made an important improvement in combining the drill with a wheel and an inclined block, by which the drill is elevated, turned and dropped by cord working on the block. It will be recollected that we published an account taken from one of our English exchanges, of an American Rock Drill which is now used on the California Railway, and which far surpasses anything of the kind in Britain, a fact which is candidly acknowledged by the English engineers.

### New Railway Signal.

A signal of a novel description, has recently been fixed to the gurnel's carriage, on the South-Western line, England, consisting of an enormous bell, and a red flag. Upon the guard discovering anything wrong in the train he can merely pull a wire, cause the bell to ring very loudly, and at the same time a red flag flies up, as a signal that the engine driver is immediately to stop the train.

### Washing Machine.

Numerous washing machines have been invented to save the fair sex from the severe labors of the Wash-board. Yet for all the inventions relating to the saving of female labor, it is a fact that washing machines are used to a very limited extent. Some washing machines are worse than useless, others again are very good, but, unless in the saving of severe labor, we have not seen one that equals a good pair of hands. "We hope yet to see a machine of this kind that will prove to be the grand female friend, for why should not washing machines be made like other kinds of machines, both to accomplish more labor and do it as well as it can be done by hand."

Mr. W. Younger, of Huntington, Tenn., has invented a new washing machine, which by a rotary motion of a driving roller, he has combined a toothed roller and a fluted one and a rubbing board. The rubbing board rubs the clothing and the fluted roller, by the motion of the others, presses the clothes, squeezing them and by its rotary motion turns them at the same time.

### Another Washing Machine.

Mr. Joseph Hall, of Onitield, Maine, has invented a washing machine whereby he has inserted fluted rollers, which by their revolution on the clothes, changing their position and rubbing them, it may be said, in this manner, as the clothes are pressed, or are changed in the washing box which is also fluted, (blunt grooves.)

### Swimming Skate.

This is the name of an English invention, intended to facilitate swimming, and which we should think might prove useful, in places where bridges and boats are scarce. It is a piece of wood furnished with two parallel rows of plates, folding over each other, so as to resemble, in some degree, the laths of a blind. They open or shut, according to the act to which the skate is attached, move downwards or upwards and the swimmer advances by the alternate motion of his limbs, as in mounting a stair, keeping the body and head inclined a little forward, as in skating. By the aid of this instrument the skater can in any direction he pleases, raise himself out of the water by the girdle, and continue the exercise almost as long as that of walking. In order to plunge to the bottom he has only to raise himself, by quick motions of his limbs, as high above the surface as possible, and then point the toes downwards.

### Coming the Dodge over the Fowls.

The Perry, Ohio, Democrat, has the following interesting review of the production in the egg line, does not Aladdin's lamp as many as Saladin's blade divided the siltken cushion.

"Mr. J. N. S., in this village, claims to possess letters patent for an ingenious 'Hen's Nest,' which he thus describes: 'The bottom of the nest is so constructed as to let the egg through, and out of sight; when the hen turns round to view her production, each egg brings her delight the while, she is astonished to find her nest empty (so naturally supposing herself mistaken, she again sits down and lays another egg)—and so on, until the necessary number of eggs required are obtained. Mr. S. does not manufacture the nest, but offers it to the trade for sale. The nest would be an excellent accompaniment to the 'Steam Egg Hatching Machine.'"

### Veneering Metal Plates.

An ingenious mechanic in Manchester, England, has taken out a patent for making thin metallic plates as substitutes for mahogany and other veneers of wood. He fastens his plates by fine screws in any waving or curving line, and then, by means of the most varied and beautiful shades. In fact, it is said to be a wonderful improvement, as the fineness of the surface cannot be equalled by wood, as the variety of blendings by the Japan opens up a field for artistic display in colors.

### Improvement in Roving Cans.

Mr. J. W. Strange, of Taunton, Mass., has invented an improved method of laying roving in cans. He combines with the coiling apparatus his machinery so that a rotary motion is imparted to the vertical axis of the can into which the roving is coiled, so as to produce a twist in the roving.



### LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT

For the week ending Nov. 13, 1874.

To Philip Pitts Ford, of Durham, Mass., for improvement in Horse Shoe Machines.—Patented Nov. 13, 1874.

To A. Gould and William T. G. Morton, of Boston, Mass., for improvement in apparatus for inhaling ether, &c.—(said Gould having assigned to the said Morton.) Patented Nov. 13, 1874.

To Stephen H. Long, of Louisville, Ky., for improvement in Bridges. Patented Nov. 13, 1874.

To George Escol Sellers, of Pittsfield, Ohio, for improvement in machinery for ascending and descending incline planes. Patented Nov. 13, 1874.

To Richard F. Loper, of Philadelphia, Penn., for improvement in Ship Building.—Patented Nov. 13, 1874.

To John Wind, of Thomasville, Ga., for improvement in Cotton Cleaners. Patented Nov. 13, 1874.

To H. B. Fernald, of Boston, Mass., for improvement in Alarms for Steam Boilers. Patented Nov. 13, 1874.

### INVENTOR'S CLAIMS.

#### Packing and Pressing Cotton.

Mary Ann Mead (executor of James Mead deceased), of Auburn, Ia., for improvements in packing and pressing cotton.—Patented 14 August, 1874. Claim—What I claim therein as new, and desire to be secured by Letters Patent is the within described apparatus for forming a bale of cotton under pressure on a spindle or revolving rod, but I do not intend by this specification to limit myself to the precise arrangement herein described, so long as I attain the same end by equivalent means. For instance, the pressure of the roller may be increased by the aid of levers or the hydraulic cylinder, and gearing by a pair of conical pulleys may be applied to increase the power to the increased size of the bale, &c. Also the rod may be of several pieces to facilitate its withdrawal, and an endless apron may be applied to the table.

#### Winnowing Machines.

By Jacob Rehel, of Millintown, Pa.—Improvement in winnowing machines. Patented August 21, 1874. Claim—Having thus fully described my improved winnowing machine, I claim that herein as new, and desire to secure by Letters Patent is the forming of a series of shoulders one above another on the inclined board, forming the bottom of the hopper, in combination with the reciprocating longitudinal movement of the same, for the purpose of regulating the feed from the machine, what I claim therein as new, and desire to claim the combination of the separator shaft with the shoe, and with the pitman, for the purpose of imparting to it a reciprocating horizontal movement, and a vibratory motion on its axis at the same time, substantially in the manner and for the purpose set forth. I also claim the combination of the screen and the slide with the apron, substantially in the manner and for the purpose set forth.

#### Decorations in Leather.

This beautiful discovery is now coming into general use. The process is simple. The leather is first subjected to the action of steam in metal troughs, which renders it susceptible of very minute impressions. The design it is to assume is formed in a metal mould, and is forced into the leather, in its pliant state, is forced by a hydraulic power.

A merchant has been convicted in Glasgow for adulterating the meat to the Highland power.



## New Inventions.

### Improvement in Safes and Warehouses.

Mr. Barnard A. Warren, Golden Pen manufacturer, Brooklyn, N. Y., has invented a plan for making Safes and Vaults and Doors perfectly secure against being cut open by any mechanical instrument. It must be of great importance to Banks where large quantities of money are deposited and to Warehouses where valuable goods are stored. The late, almost successful robbery of the Seventh Ward Bank, where the iron plate of the Safe was cut through like cheese, has excited the mind of the inventor to make something that would be proof against burglars' cutting tools and the result has been a safe, made for himself, to answer the desirable purpose. The improvement is not expensive, and letters patent have been applied for.

### New Street Railroad.

Mr. Leander Rodney, of Philadelphia, proposes a new plan for a street railroad, which has some novelty at least. The tracks are to be laid with convex rail several feet under ground; two concrete wheels, to each car, to run on the said convex rail; a number of iron bars or shafts, having one end attached to the wheel frame, or axle-tree, under ground, and extending perpendicularly through an opening only a few inches in width to the springs of the cars above ground, said opening along and through which the shafts must pass, to be strongly built up on both sides with rough hewn stone, and the top covered by a series of valves attached by hinge joints to the cheeks of the car, or to one side of the opening—the valves to be raised by a projecting lever or shore, something like a plough share, and closed again as fast as the shafts and car shall pass along—the top of the valves to resemble the pavement, rendering them almost imperceptible, and offering no obstruction whatever; the cars to be two stories high—the first or lower story to be only wide enough for one row of seats, leaving sufficient room for two carriages or carts to pass at the instant the two trains are passing—the second or upper story to have two rows of seats and a passage way, the stairway to be inside. The cars will always incline to the right, and be regulated by two small wheels, called governors, running on a side rail just below the top of the opening.

### Preserving the Dead.

James S. Scofield, chemist of Division street, this city, professes to have discovered a chemical process to preserve from decomposition the body after death. So efficient it is said is the process that the ravages of time and decay are completely frustrated—the body remaining in a state of perfect preservation without change even in color. One of the many advantages of this process is that the body may be kept for any length of time, thereby permitting the arrival of distant relatives before consigning it to the tomb.

### Another Washing Machine.

Mr. Dennis Newton, of Homer, Ohio, has invented a new washing machine whereby he combines a swinging or pendulum lever with the rubbing board, so when the end of the lever is raised and lowered the clothes are stirred and squeezed so that the washing is performed in a very short time.

### The Pneumatic Hydraulic Engine.

Professor Bigham, of Covington, Ky., says the Cincinnati Atlas, claims to be the inventor of a machine, to which he has given the above name, which by the application of merely a one horsepower, will raise water 300 feet, and in quantity sufficient to supply the whole city of Cincinnati! He says he can fill a reservoir on Mount Adams of any capacity and keep it always full for less than \$2000 a year. Two good news to all true.

### Improved Harrow.

Mr. Francis Kent, of the township of Chinguacousy, Canada West, says the Hamilton Gazette, has invented and is now patenting, what has long been considered a desideratum—a perfect harrow. It is 14 feet in width, and is in three parts; a centre, to which the horses are attached, and a wing on each side, coupled to the centre piece by an iron rod. In passing among stumps, or large stones, one or both wings can be lifted at occasion requires, and they, of course, accommodate themselves while being dragged along to every inequality of surface. The harrow being drawn by the centre, brings the draft near the horses, making it easier to draw, and also decreases the same depth of harrow to pass on all the ground that it embraces, which is not the case with the other harrow; and in order to prevent the harrow from rising, in consequence of the horses being hitched so closely, they draw by a beam, turning up in front like a sleigh runner, into which the butts of the centre piece are morticed.

### How to cut a Level for a Hopper.



I send you a plan which I think simple and easily understood, and one which I know to be perfect for any angle whatever.

### RULE FOR A HOPPER.

First draw the size of the top of the hopper. A & A'; then draw lines across it diagonally, or across from corner to corner, then measure up from the centre B, to the intersection of these diagonal lines, on one of the lines, the depth of the hopper to C; then draw two lines from the corners A, A' to C; then set the dividers at B, and describe a circle just so as to cut the lines A and C; then draw lines from A, A' to the point D where the circle crosses the line B C, and which will be the right level for the corner piece.

E. BISHOP.

### Improved Carriage Hub.

Mr. A. P. Lyman, carriage maker, Williamsburg, Mass., has invented a new and most useful improvement in the manner of combining the axle and hub of a carriage wheel. The invention consists in having a groove cut on the axle just inside of the hub and by having a coupling box bolted on the inside of the hub also, through which the axle slips into the hub and is fastened to it by a spring in the coupling box which catches the rim of the groove of the axle and holds it fast while it works in the groove smoothly as the wheel spins round. The outside of the hub is boxed over and has no rivets. To gear and ungear the wheel on the axle for greasing or any thing else, is but the work of a moment, by turning the spring. Application has been made for a patent. We shall present an engraving of it next week.

### Improved Hoe Blade.

Mr. Lyman has also invented a combination of the hoe and rake, very useful for gardeners and for florists. Every person who has a taste for gardening should have one. There are some fit for ladies for decorating the parterre, and they are not instruments. They are for sale by Clark & Wilson, Platt street, this city, and at a number of the hardware stores in Pearl street.

### New Kind of Brick.

A gentleman of Woodbridge, England, has invented a new kind of brick, so shaped as to form internal channels for the passage of air, and by this means produce a complete wall ventilation, a counterpart to the ventilating glass windows noticed a long time since in our columns.

### New Application of Atmospheric Pressure.

I beg to suggest to some of your mining engineers the application of air-pumps and an exhaustor to be fixed close to the water-wheel, or other motive power, and to select a spot whereon to fix a drawing machine, that any shafts already sunk, or any hereafter to be sunk, may be worked to the greatest advantage. This machine to consist of two cylinders, say of 16 in. diameter, with slide-valves and a double crank, so fixed as to turn the center gear, and the communication between the exhaustor and this machine to be by means of a close pipe, laid under the surface to exhaust these two cylinders, and to allow the pressure of the atmosphere to act on the pistons; this could be worked with a 5-ft stroke to about 35 horse-power. The size of the air pump, and cylinders, of course, to be governed by the power available, and by the duty required to be performed. One cylinder and a fly-wheel may be used instead of two cylinders, and I think it will be obvious to any engineer, that the machinery requisite to work this will be very trifling, as there will not be any water wanted to the machine, condensing gear, and other parts, as in a steam engine, but merely the cylinders, cranks, eccentrics, sliding-valves and hand-gear, to regulate the power and speed. It may be worked on the expansive principle, or, by having an inverted safety-valve in the exhaustor, loaded to any pressure required; and this machine may be either reversed, or struck out of gear to lower the kibbles. I have no doubt but some of your many readers can, on a little consideration, see where this principle can be applied to a very great advantage.

C.

### Humane Invention.

The Boston Bee says that Mr. E. N. Morse of that city has recently patented an excellent invention of an apparatus intended to be applied to stables, for the purpose of freeing horses from flies and annoying them from swarms of these flies. This, too, without any danger to the person liberating them, and with the utmost certainty of success. Very liberal offers have already been made to the inventor for the privilege of vending his apparatus in the different States. Persons owning horses, from humanity to their animals as well as regard for their property, will undoubtedly apply this humane apparatus to their stables.

### To estimate Corn in Bulk.

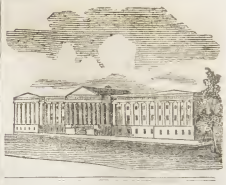
"The following rule for ascertaining the quantity of shelled corn in a house of any dimensions is by William Murray, Esq., of South Carolina, and was read before the St. John's Collection Agricultural Society," and communicated by them for publication in the Southern Agriculturist:

"Rule.—Having previously levelled the corn in the house, so that it will be of equal depth throughout, ascertain the length, breadth and depth of the bulk; multiply these dimensions together, and their product by four, then cut off one figure from the right of this last product. This will give you so many bushels and a decimal of a bushel of shelled corn, substitute 8 for 4, and cut off one figure as before.

"Example.—In a bulk of corn in the ear, 12 feet long, 11 feet broad, and 6 feet deep, there will be 316 bushels and 8-10ths of a bushels of shelled corn, or 632 bushels and 6-10ths of ear corn: as  $12 \times 11 = 132 \times 6 = 792 \times 4 = 3168$ ; or  $12 \times 11 = 132 \times 6 = 792 \times 8 = 6336$ . The decimal 4 is used when the object is to find the quantity of shelled corn, because that decimal is one-half the decimal 8, and it requires two bushels of ear corn to make one bushel of shelled corn. In using these rules, half a bushel may be added for every hundred; that amount of ears results from the substitutions of the decimals. The term 'bushel of corn' so much used by the southerners, means 5 bushels of shelled corn."

### New method of manufacturing Bank Note Paper.

The paragraph in our last number relative to this invention by Messrs. Crane & Co., of Dayton, Mass., should have read "Dalton, Mass."



### LIST OF PATENTS.

ISSUED FROM THE UNITED STATES PATENT OFFICE.

For the week ending Nov. 20, 1847.

To George W. Campbell, of Belleville, N. J., for improvement in the manufacture of Bullets, &c. Patented Nov. 20, 1847.

To C. Augustus Smith of Cincinnati, Ohio, for improvement in Percolating Apparatus—Patented Nov. 20, 1847.

To Adrien Olcott, of Newark, N. J., for improvement in machinery for preparing husks for Mattresses. Patented Nov. 20, 1847.

To Edward Harrison, of New York City, for improvement in Mills for Grinding. Patented Nov. 20, 1847.

To James Haggart, of New York City, for improvement in Window Sash Fasteners—Patented Nov. 20, 1847.

To Robert Connings, of Lima, Indiana, for improvement in Bog Cutters. Patented Nov. 20, 1847.

### INVENTOR'S CLAIMS.

#### Improvement in Cotton Spinners.

By Elijah M. Harris and James Cleghorn of New York, &c. Patented August 21, 1847. Claim.—What claim as an invention and desire to secure by letters patent, is the combination of the handles with the axle and hoe frame as described. The axle and hoe frame being independently attached to the axle which forms the fulcrum, and the relative position of the handle and hoe frame being adjustable, the handles are converted into levers for elevating and depressing the hoes.

#### Saw Filing.

By Charles Lafayette, of York Springs, Pennsylvania. Improvement in machinery for Setting and Filing Saws. Patented 21st August, 1847. Claim.—What I claim as my invention, and desire to secure by Letters Patent, is constructing a Saw set in the manner described, by having one jaw raised above the other and bevelled on the face, with a rib bevel, as described, by which teeth are set by a toothed lever that hooks over said rib and brings the tooth against the teeth of the saw, as above described—the width of the set of the teeth being determined by the gage substantially in the manner and for the purpose set forth. I also claim the filing apparatus constructed substantially as herein made known, consisting of a file holder, consisting of a standard that slides parallel in front of the jaws of the clamp to which the file attached, as to be horizontally in any direction to which it is set, and so regulated as to file to any given depth the holder is set for, so that it will direct the file to the proper angle and depth on the saw, in the manner and for the purpose above specified.

#### Casting Ordinance.

Thomas S. Rodman, of Pittsburgh, Pa., for improvement in casting ordinance, &c. Patented 14th August 1847. Claim.—Now, what claim as my invention and desire to secure by Letters Patent of the United States, is the cooling from the interior of guns or other heavy hollow castings intended to resist a central force, by circulating within the core a cooling of air gas, in contact with the application of artificial heat at the exterior of the dash to prevent cooling from the without.

#### New Canal Boat.

The small steamer which was constructed at Boltonston, N. J. for the canal, as an experiment, is far as it has been tried, seems likely, it is said, to prove entirely successful. It is built after the model of a porpoise, and propelled ever so swiftly through the canal, causing no more wash upon the banks than does a common canal boat.



Patent Ink and Salt of Gold.  
(Concluded from our last.)

Seventhly, Mr. Reade manufactures by the improved process following, a marking ink, which may be used with steel pens, and is not only of great intensity of color, but comes out most readily on the application of heat.—He rubs together in a mortar nitrate of silver, and the proper equivalent of tartaric acid in dry state, and then adds water, on which crystals of tartaric acid are formed and the nitric acid set free. He next neutralizes this acid by adding liquid ammonia, which also dissolves the tartaric acid of silver. He finally adds gum, coloring matter and water, in the usual way and in quantities which may be varied at pleasure. By this process the nitric acid, which is essential to a good marking ink, is retained, and the tartaric acid of silver formed is soluble in less than half the quantity of liquor ammonia ordinarily required when tartaric acid of silver is the basis of the ink. The tedious operation of filtering and washing the carbonate of silver, in order to form the tartaric, is also thereby entirely dispensed with.

Eighthly, he manufactures a marking ink, allowing, a marking ink, differing from the preceding, and all other marking inks containing salts of silver only, in this respect, that it cannot be acted upon by the common solvents of salts of silver, as cyanide of potassium or chloride of lime, and so far, therefore, more indestructible. He takes the ink as has been formed by the process last described, and adds to it an ammoniacal solution of an oxide, or salts of gold. He has used for this purpose the purple of Cassius, the hyposulphite of gold, the ammonio-iodide of gold and the ammonio-periodic of gold. The two last salts which he believes to be new salts, he has by dissolving iodine in liquor ammonia, and under the application of heat, an operation, however, which requires to be conducted with great caution, in order to prevent the formation of the explosive compound, the triiodide of nitrogen. This iodine solution is a very speedy solvent of gold. If gold leaf be placed upon it without the addition of water, a black oxide of gold is formed, which immediately dissolves, but if it be diluted with water, the process of oxidation is less rapid, and the gold leaf assumes a fine purple color, (not black), before solution. This salt of gold crystallizes in four sided prisms, which are soluble in water. A few drops of this solution placed on a slip of glass generally form microscopic arborescent crystals, from which, under the application of heat, both the iodine and ammonia may be volatilized, and arborescent metallic gold alone remains. If a moderate heat only is employed, one equivalent only of iodine is displaced and white crystals of ammonio-iodide of gold remain.

Ninthly, he manufactures a blue printing ink by taking the soluble precipitate of cyanogen and iron, obtained by the process described under the first head of this specification, and rubbing up the same in oil, after the manner ordinarily followed in the manufacture of printing inks; or by boiling down the blue printing ink produced by the said process to sufficient consistence, and then rubbing up the same in oil.

Tenthly, he manufactures a black printing ink, by boiling down the black writing ink produced from the materials, and by the process described under the fifth head of this specification, and rubbing it up in oil as aforesaid.

Eleventhly, he manufactures a red printing ink by taking the ammoniacal solution of cochineal, obtained by the process described under the sixth head of this specification, and rubbing it up in oil as aforesaid.

And twelfthly, he manufactures a black printing ink by boiling chips of logwood, for which an extract of logwood may be substituted, or other dyewoods containing coloring matter and tannin, along with as much of a

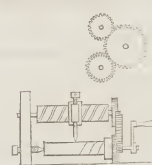
protocol, or persalt of iron, or copper, or other precipitate of tannin, as will be equal to about twice the weight of the tannin contained in the wood or extract employed; whereby he obtains black or bluish black precipitate; the blueness of which he diminishes as may be required, by the addition of bichromate of potash, more or less. He finally rubs up the whole in oil as aforesaid, adding a small quantity of the lampblack, or other black coloring matter employed in the manufacture of black printing inks.

#### Weighing Machine of the Bank of En.

The most interesting place connected with the machinery of the Bank of England is the weighing office, which was established a few years ago. In consequence of a late proclamation concerning the gold circulation, it became desirable to obtain the most minute accuracy, as coins of doubtful weight were plentifully offered. Many complaints were made that sovereigns which had been issued from one office were refused at another, and though these assertions were not always founded on truth, yet it is more than probable that the evil occasionally occurred. Every effort was made by the directors to remedy this complaint, some millions of sovereigns being weighed separately, and the light coins being divided from those which were full weight.—Fortunately the governor for the time being, before whom the complaints principally came had devoted his thoughts to scientific pursuits and he at once turned his attention to discover the cause which operated to prevent the attainment of a just weight. In this he was successful, and the result of this inquiry was a machine remarkable for an almost elegant simplicity. About eighty or a hundred light and heavy sovereigns are placed indiscriminately in a round tube, as they descend on the machinery below, those which are light receive a slight touch, and this moves them into their proper receptacle, while those which are of the legitimate weight pass into their appointed place. The light coins are then deflected by the sovereign-judging machine, observable alike for its accuracy and rapidity. By this two hundred may be deflected in one minute. The weighing machine 35,000 may be weighed in one day.

#### MECHANICAL MOVEMENTS.

##### Transferring Circular Motion.

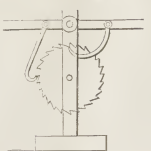


This cut is a representation of another method of transferring circular motion. The lower combination represents a pointed sliding cog wheel, which is moved forward on a screw shaft with the point resting on a lower smooth shaft, cutting a spiral on the same by the revolution of the lower shaft working circularly to shape the spiral and by the revolution of the upper screw shaft moving regularly forward the cutting wheel. The motion of these shafts is communicated and according to the fineness of the thread wanted on the lower shaft, so in proportion must there be a fine chisel mover and a proportionate size of cog wheel on the lower shaft. This is a very beautiful combination of machinery and the connection and motions are plain to every eye.

The other combination is a principle by which a gain of speed is made from one large wheel in its connection with two smaller wheels. Every revolution of the larger or driving wheel, causes each of the smaller wheels to revolve once and two thirds of a revolution, supposing there are sixteen teeth of the small wheel or motion, making 24 in the two, and only 25 cogs in the larger wheel. If the cogs of the two small wheels were combined in one and driven by the larger wheel of the

25 cogs, the combined wheel, (using the term for plainness), would move one sixth slower than the driver, but in the present combination, for every revolution of the larger wheel, the small wheels make jointly three and one third revolutions. This is another beautiful combination and is a clear exhibition of what is called "the loss of power in the gain of speed."

#### Vibrating Circular Motion.



The vibrating action of the horizontal lever in the upper part of this figure will produce a continuous revolution in the wheel beneath, by means of the two catches, one of which is acting on the wheel while the other is gathering a tooth.

#### Treatment of a Contrary Horse.

When a horse gets in the way of being contrary and will not go forward as it is common to apply the whip freely. Solomon says "a whip for a horse," but he may not refer to cases of this kind. At any rate it is often, where thus used, of no benefit, only the gratification of the enraged driver. A method more successful is to treat the animal very kindly. His contrary disposition is usually the result of having been fretted in some way and kindness may overcome it. Make much of him at all times. Speak kindly to him and so often that he will become accustomed to your voice. When he stops when attached to the carriage or a load and will not move, approach him in the same gentle manner. Stroke the mane and pet the hand frequently on the head. Means of this kind will have a powerful tendency to overcome his stubbornness, as brutes feel the power of kindness. Young horses especially, in nine cases out of ten, may be successfully cured of contrary habits in this way, while the application of the whip would only increase the difficulty.

#### To Cleanse Gentlemen's Cloth Coats and Pantaloons.

The writer has tried and uses others try, the following method with remarkable success, on all sorts of broadcloth articles of dress. Take one beef's gall, half a pound of salaratus, and four gallons of warm water.—With a clothes brush dipped in this mixture scour the article, laying it on a table for that purpose. The collar of a coat and the grease spots (previously marked by a stitch or two of white thread) must be brushed with this mixture repeatedly. After this take the article and rinse it up and down in the mixture.—Then rinse it up and down in the same way in soft cold water. Then without any wringing or pressing, hang it up to drain and dry—open dry, dampen the seams, and iron in the wrong side, or else spread something between the cloth and iron, ironing till perfectly dry. It is best to rip out pockets and linings, if the articles are worth the trouble. Also brush the article before washing. It is often best to iron no part but the skirt, and press the lappets and collars.—Massachusetts Ploughman.

The only objection that we have to the above is the gall. It leaves behind a very unpleasant smell. The price for cleansing a good Dyer and Scourer should not be considered too much in comparison with an offensive odor, which has ever afterwards been in cloth that is dried if but the last remains of gall is left in it.

#### To Preserve Oranges.

Boil oranges in clear water, until you can pass a straw through the skins; then clarify three-quarters of a pound of sugar to one pound of oranges, and pour over the fruit while hot; let them stand one night, then boil them in the syrup until they are clear, and the syrup thick. Take them from the syrup and strain it clear over them.

#### Sensations in the Air.

A young lady who accompanied Mr. Gypson the aeronaut in his balloon ascent from Birmingham says:—"To me the sensations of the ascent possessed a peculiar pleasantness, which it would be difficult to describe. It appeared as if the car of the balloon, together with all connected with it, remained just as it was, while the earth and its inhabitants sunk, away from us, and left us suspended stationary between earth and heaven. The beautiful flood light and soft silver-like scenery that burst forth into view in vain for me to attempt to describe."

#### Pneumatic Palates.

Under this title an article has appeared in the London Times, describing the mode of fixing false teeth in people's mouths, and enabling them, by means of a "vacuum," to munch and masticate with the greatest ease and vigor. If the inventor of this contrivance could manage to remove the vacuum existing in the stomachs of the thousands of hungry mendicants which swarm the streets of London, those persons would neither trouble him for false teeth or palates. As far as the pneumatic principle is concerned, they are the most practical illustrations of the system of being "blown out" with nothing but wind.

#### Death by a Dissecting Wound.

A young lady named Crawford, of Philadelphia, and a member of the Jefferson Medical School of Philadelphia, came to his death a few days ago, in that city, from the effects of a slight puncture received in one of his hands, whilst engaged in dissecting.

#### Puddling Iron.

Some of our readers may not understand the term "puddling iron." It is simply putting pigs or scraps of iron in a heated furnace, where it melts and boils, being constantly stirred, until it becomes dry or hard as iron to form a ball. It is then taken from the furnace, put under heavy rollers, and made into blooms, which are drawn between other rollers into rods or bars to suit customers.

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